IRRIGATION OF THE AQUEOUS CHAMBER FOR THE REMOVAL OF REMAINING CORTEX.

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In the extraction of senile cataract the nucleus, or hard center of the lens, is expelled through the corneal incision. The outer, or cortical portion of the lens is usually scraped off by the lips of the corneal incision during the delivery of the lens, and remains behind in the aqueous chamber. If left there this remaining cortex soon swells up, becomes perfectly opaque and so interferes with vision. In addition the remaining cortex acts like a foreign body and sets up an iritis with its attendant evils.

The amount of this cortex varies in different cases according to the degree of sclerosis of the lens, but the amount left in the eye after the expulsion of the lens is usually sufficient to defeat vision unless it is removed. The removal of this cortex is, hence, an essential step in the extraction of senile cataract. The two methods employed for its removal are massage and irrigation.

Massage consists in making rotatory movements over the eyeball, through the closed lids, so as to collect the remaining cortex into the concavity on the posterior side of the cornea and then, by opening the eye, and making gentle, stroking movements from below upward, expelling the cortex through the incision. In this way, the cortex is expelled, but oftentimes only imperfectly, so that a part of it is still left in the aqueous chamber. Hernia of the iris, which often accompanies the expulsion of the lens, may, by this method, be replaced, but frequently the prolapse will persist. Massage, while it is employed by many of the best operators, is often unsatisfactory by reason of the facts stated, *i. e.*, is often imperfect and fails to replace a prolapsed iris.

To better remove this residual lens matter from the eye, irrigation was employed by Panas, of Paris, and subsequently, in this country, by Lippincott, of Pittsburg. I have, myself, used this method for the past ten years, not in every extraction, but in many cases, and have been much pleased with the results obtained.

METHOD OF USING.

Panas originally used a sol. of bin-iodide of mercury, 1-20,000, with which he irrigated the anterior chamber. The only solution I have used is a sterile normal saline solution. I prefer this to the solution of the bin-iodide of mercury for the following reasons:

1. The mercury solution is irritating and may set up an iritis; while the normal salt solution represents, with fair accuracy, the composition of the aqueous humor; the tissues are, therefore, accustomed to it and are not irritated by it. I have never had a case of iritis that I could attribute to the irritating effects of the salt solution.

2. The original object of putting the mercury in the irrigating solution seems to have been that it would act as an antiseptic. Now there is no need of an antiseptic in the aqueous chamber during a cataract extraction. Asepsis—not antisepsis—should be employed.

The solution should be the temperature of the body to prevent unpleasant effects upon the tissues of the eye. It can be used with either a small bulb syringe, or with a miniature fountain syringe, the latter being the better. The fountain syringe I employ has a capacity of about one ounce, with a rubber tube some 18 inches long, terminating in a small silver nozzle. The construction of this nozzle I have found to be important. It can be made of silver, or of German silver. It should be 7 cm. long so as to enable the operator to handle it easily; should be bent in the center at an obtuse angle, and should terminate in an oval tip 1x3 mm. The oval shape facilitates the introduction of the tip through the corneal incision, and when introduced the tip is turned so as to make the wound gape, thus making an opening through which the returning fluid will escape, bringing with it the fragments of remaining lens.

An assistant holds the fountain syringe, and the height at which it is held above the eye determines the force of the current. A very weak current is sufficient and the reservoir should be held only 3-4 inches above the eye being irrigated. The first fluid returning from the aqueous chamber will usually bring with it the remaining remnants of the lens, the iris, which is often prolapsed, being at the same time replaced and the pupil left contracted, central, circular and black. As a rule not more than 20-30 minims of the solution are used in the aqueous chamber, but occasionally some fragments of lens, adhering to the capsule, require a more prolonged irrigation.

Every operator knows how difficult—how almost impossible—it is at times to get a prolapsed iris to resume its normal relations. In the accomplishment of this much-to-be-desired result, irrigation is a most effective remedy. The stimulating effect of the salt solution upon the iris is marked and immediate. The contracted pupil, which is so much desired after cataract extraction, especially simple extraction, immediately follows the irrigation. The effect of the irrigation, therefore, in replacing the iris and stimulating the pupil to contraction has a value which is second only to its effect in removing remaining cortex.

There are certain precautions, which reflection will suggest and experience ratify in the use of this irrigation. The solution should be sterile and freshly prepared. Not only should the solution be the temperature of the body, but the syringe should itself be warm so it will not cool the solution. At first a little of the solution should be allowed to escape upon the operator's finger so he may be doubly sure its temperature is right. The fluid should not be allowed to escape from the nozzle while it is being introduced, as germs might thereby be washed from the conjunctiva, through the incision, into the aqueous chamber. The force of the current should be slight, and as soon as the objects of irrigation are accomplished, *i. e.*, the remaining cortex is removed and the iris replaced, the irrigation should be immediately stopped. Where the current is too strong, or is too long continued, the posterior lens capsule may be ruptured and loss of vitreous result. It goes without saying that irrigation should not be used where vitreous is already escaping. If employed in accordance with the above suggestions, I am sure irrigation will result in good and not harm.

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